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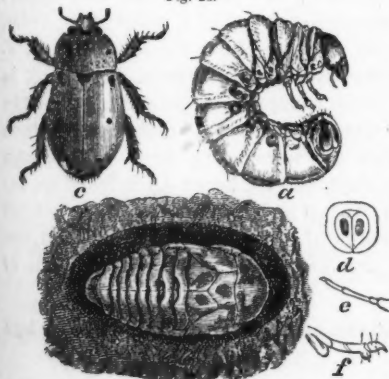
ON SOME OF OUR COMMON INSECTS.

18.—THE SPOTTED PELIDNOTA—*Pelidnota punctata*, Linn.

BY THE EDITOR.

This large and handsome beetle is an enemy to the grape vine. It attacks the foliage, eating numerous holes in the leaves, and sometimes

Fig. 24.



when the beetles are abundant, completely riddling them. Damage from this cause to any great extent is however, fortunately of rare occurrence; in most instances the beetles are not numerous, but even where only occasionally met with, their size and beauty will always attract notice.

larva (a), chrysalis (b), and beetle (c); it is in the latter state only that it is injurious to the vine.

In the accompanying figure 24 (after Riley) this insect is shown in its three stages of

The beetle measures about one inch in length, and half an inch in width at its widest part, is nearly oval in form and of a dull reddish yellow color, with a polished surface. The thorax, which is slightly darker than the wing covers, has a small black spot on each side, and there are three larger ones on each wing case. The jaws and posterior part of the head are both black; so also is the scutellum, which is a small, nearly triangular piece placed near the centre above, just where the two anterior edges of

the wing cases join the thorax. The transparent gauzy wings, which are concealed when not in flight under the wing cases, are dark brown. The under side of the beetle is of a dark green shade, with a metallic lustre and downy about the middle, with fine brownish hairs; legs dark shining green.

It appears with us during July and August, and is moderately active during the day time, flying about from vine to vine with a heavy awkward flight and loud buzzing noise. After pairing, the female deposits her eggs in rotten wood, on which the grub, when hatched, feeds; the decaying stumps and exposed roots of different trees are usually selected for this purpose. Mr. Riley, of St. Louis, Mo., was the first to describe this larva, and we quote his description as given in the *American Entomologist*, vol. 2, p. 295:

"It is a large, clumsy grub, bearing a close resemblance to the common white grub of our meadows, and differs from that species principally in having the skin more polished and of a purer white color, and in the distinct heart-shaped swelling above the anus, fig. 24, *d*. Towards the latter part of June we have found this larva (fig. 24, *a*), in common with the pupa (*b*), in rotten stumps and roots of the pear. In preparing for the pupa state the larva forms a rather unsubstantial cocoon of its own excrement, mixed with the surrounding wood. The pupa state lasts but from eight to ten days, and the beetle (*c*) is found on our vines during the months of July, August and September. It is not yet known how long a time is required for the development of the larva, but from analogy we may infer that the insect lives in that state upwards of three years."

In the figure, *e* shows the antenna of the larva, and *f* one of the legs—both magnified.

This insect in our Dominion is confined mainly to the province of Ontario, and prevails most in the western section. We are not aware of its having been found at all in Quebec. It is common in most of the Western and Eastern States. Should it become sufficiently numerous in any section to excite alarm, it may readily be checked by hand picking; the insect being heavy and clumsy in its movements, may be easily captured and destroyed.

THE LINNEAN SIGNIFICATION OF THE GENERIC TERM PAPILIO.

BY SAMUEL H. SCUDDER, CAMBRIDGE, MASS.

Perhaps no part of my "Systematic Revision of Some of the American Butterflies" has been more severely criticized than the restoration of the Linnean name *Papilio* to one of the nymphalideous butterflies, *Antiope*. The principal objection made to this change, besides the fact that it runs counter to the current of modern usage, being that it violates the idea of the genus as it lay in the mind of its founder. The attention of those interested is called to the following historical facts, not given in the Revision.

The name *Papilio* was established by Linné in the first edition of his *Systema Naturæ*, in 1735*, where the following division occurs:

ANGIOPTERA.

Alae omnibus datæ, elytris destitutæ.

PAPILIO. Rostrum spirale, alae 4.

Papilio alis erectis.

Psyche alis planis.

Phalaena alis compressis.

Here the typical *Papiliones* are the butterflies in general. The succeeding genera of *Angioptera* are *Libellula*, *Ephemera*, *Hemerobius*, *Panorpa*, *Raphidia*, *Apis*, *Ichneumon* and *Musca*.

In the second edition of the same work (1740) we find the following on p. 60:

153. PAPILIO. *Cauda simplex*, alae iv. Rostrum spirale seu nullum.

Pap. antennis clavatis, pedibus 4.

" " " 6, alis erectis angulatis.

" " " 6, " rotundatis.

" " " 6, alis patentibus.

" " " 6, alis reflexis.

Pap. ore spirale, antennis subulatis.

" " " barbatis.

" nullo, " subulatis.

" " " barbatis.

* I have only been able to consult Fee's reprint, Paris, 1830, p. 76.

The butterflies with aborted front legs (*i. e.*, Nymphales) are here placed at the head of the series.

The third edition (1740) was but a reprint of the first, for German students.

The following arrangement occurs on p. 94 of the fourth edition (1744):

160. PAPILIO. *Antennæ clavatæ.*

P. pedibus 4.		
" 6, alis erectis angulatis.	}	le Papillon.
" 6, " rotundatis.		
" 6, alis patentibus.		
" 6, alis reflexis.		

Here Papilio is still further restricted, always in the direction of the butterflies, and those with atrophied front legs are still at the head of the series.

In the year 1746 the first edition of the Fauna Suecica was published, in which Linné for the first time treats of species, giving to them names in the language of the country. The butterflies are found on pp. 232-248, and are divided into two groups, as follows:

[232.]* Pedibus quaternis unguiculatis.

[240.]* Pedibus sex unguiculatis.

The so-called tetrapods still at the summit. The species are numbered from 772 to 807; the species afterwards named *antiopa* is No. 772; that called *machaon*, No. 791.

In the fifth edition of the Systema Naturæ (1747), under Gymnaptera, p. 68, is an exact repetition of what is found in the second edition.

The sixth edition (1748) contains the following on p. 63:

185. PAPILIO. *Antennæ clavatæ.*

1. Papilio pedibus 4, alis erectis angulatis.	morio Fn. 772.
	polychloros Fn. 773.
	urticana Fn. 774.
	C. duplex Fn. 775.
	oculis pavonis Fn. 776.
	ammiralis Fn. 777.
	belladonna Fn. 778.

- | | |
|---|--|
| 2. <i>Papilio pedibus 4, alis erectis rotundatis.</i> | <i>imperator</i> Fn. 779.
<i>comes</i> Fn. 783. |
| 3. <i>Papilio pedibus 6, alis erectis angulatis.</i> | <i>regina</i> Fn. 791.
<i>canicularis</i> Fn. 795. |
| 4. <i>Papilio pedibus 6, alis erectis rotundatis.</i> | <i>brassicaria</i> Fn. 799.
<i>aurora</i> Fn. 801.
<i>alpicola</i> Fn. 802.
<i>argus</i> Fn. 803-806.
<i>butyracea</i> Fn. 807, 808. |

Here not only are the four-footed butterflies placed first, but, as in the *Fauna Suecica*, "*morio*" (*i. e.*, *antiopa*) heads the list, followed directly by the butterflies most closely allied to it—*polychloros*, *urticae*, *c-album*, *io*, *atalanta* and *cardui*, in the same order as they occur in the *Fauna Suecica*, to which the numbers on the right refer.

In the seventh edition (1748), exactly the same is found on p. 63.

The eighth edition contains no animals.

In the ninth edition (1756) we find precisely the same as in the sixth—excepting in the first line, which reads, p. 69 :

196. PAPILIO. *Antennæ clavatae.* 1e Papillon.

Not until the tenth edition (1758) of his great work, did Linné place the "swallow-tails" at the head of the genus *Papilio*, in the order too well known to require repetition here. In view of these facts, it is worth enquiring: In Linné's mind, which was a *typical* *Papilio*—*Antiopa* or *Machaon*? and was there, or was there not, any reason for specially selecting *Antiopa* as the type of *Papilio*, when it was found, in 1872, that by Schrank's first limitation of the genus, in 1801, it must be applied to some one of the *Nymphales*?

ENTOMOLOGICAL NOTES.

BY W. V. ANDREWS, NEW YORK.

Mr. J. E. Fletcher has a note in the March No. of *Newman's Entomologist*, on "Controlling Sex in Lepidoptera." He says: "During last summer, I had a few larvæ of *Exapate congelatella* feeding on privet; as I was greatly occupied with other things, they were neglected; the supply

of food was very irregularly given and short in quantity, yet the moths produced from them consisted of four males, full sized, and eleven females, some of these latter being much below the average of the species in size."

I presume that the reason Mr. Fletcher supposed that the result may have been very different was because he had read in "Newman" the result of an experiment performed by an American lady, I think Mrs. Treat, who, having underfed a lot of larvæ, succeeded in producing all males, the inference drawn being that males were simply underfed females. I wrote some notes on this subject for "Newman," thinking that Mrs. Treat's paper had appeared originally in that publication. It seems, however, that it did not, and I now reproduce the substance of those notes here, as more likely to meet the eyes of all concerned.

First, then, I would remark that this clearly is not Nature's method of "controlling sex." If a batch of larvæ, say of *V. antiopa*, all feed on the same elm, there will be produced both males and females, although the feeding must be alike for all. But there is an excellent opportunity afforded Mrs. Treat of testing the value of her theory, by the larva of *Thyreus Abbottii* (Swains.) It is well known that the male larva of this species is altogether different in color from that of the female, so the sexes are easily distinguished.

Now, if Mrs. Treat will take the female larvæ, and by underfeeding it produce male imagines, the thing will be more satisfactory. I am not unaware that in Hymenoptera food is said to have a good deal to do with the production of sex, but still Mrs. Treat's experiment cannot be considered as conclusive.

Hasty generalization is a fault to which we are very liable, and doubtless the ambition to discover a new law is very laudable. A case of this nature occurs in your No. 5, vol. 6. In a paper appearing in that number, Mr. Gentry, of Germantown, fancies he has discovered the law which produces difference of color in caterpillars of the same species. Now, to be of any value, this law must be universal, and the facts of the case do not show any such universality. Mr. Gentry thinks that the difference in color and markings where this occurs is attributable to the difference in the chemical constituents of the food plant at different seasons of the year. He selects as one instance the larva of *Eacles imperialis*, and gives, correctly enough, three varieties of color. But, unfortunately, these varieties occur at one part of the season as well as at

another, and the varieties may be found feeding on the same tree. How, then, can the food have anything to do with the variation? *Eades imperialis* is single brooded with us, but still the larva is found in August as well as in October, and no difference in color is observable at one time more than another. In a previous number I related an experiment made with a brood of *imperialis*, and, in that case, every one of the larvae were dark.

The chemistry of biology is doubtless a very abstruse subject, but it is well worth any labor that may be bestowed on its investigation. The larva of *A. luna* feeding, say, on Sweet Gum, produces an insect of a beautiful green color. That of *Eades imperialis*, feeding on the same food, produces an insect of which yellow and purple are the predominant colors, while that of *regalis* produces an imago yellow and red. Here are larvae all similarly constituted as regards masticatory and digestive powers, and the substance acted upon is the same in each case, and yet how different is the result. This is very wonderful. What is there in the constitution of the digestive organs of these respective larvae that enables one to eliminate this color, and another that? Of course similar results may be observed in other animals, and the same beefsteak may contribute to the growth of a negro as well as of a white man, but still this does not diminish the difficulty we have in understanding how it is done. Entomology is a fascinating pursuit, looked at as merely an amusement, but I have an abiding faith that it is destined to throw more light on the phenomena of life than perhaps any other branch of science can. But we must avoid hasty conclusions.

I have selected only one instance from Mr. Gentry's paper, but there are others. For example, the same objections may be made in the case of *Sphinx 5-maculata* as are made in that of *imperialis*. The different colors appear at the same season, and may be found feeding on the same tomato plant.

ON THE LARVA OF CATOCALA ULTRONIA, HUBN.

BY THE EDITOR.

For several years past, while jarring our plum trees for *Curculio* in June, we have taken the larva of a *Catocala* usually less than half grown, but have never succeeded in rearing any of them until this season, when

from three larvæ taken on the 16th of June, one has been successfully brought through its various stages, and proves to be *ultronia*.

The following description was taken at the time of its capture, when it was nearly full grown.

Length 1-60 inches, onisciform.

Head medium sized, flattened in front, slightly bilobed, dull bluish grey, with the front flattened portion margined with a purplish-black stripe. Under a lens the surface appears thickly dotted with pale and dark colored dots and streaks, with a few short, pale, scattered hairs.

Body above dark dull grayish brown, appearing under a magnifying power thickly studded with brownish dots on a paler ground. Second segment a little paler than the others. A sub-dorsal row of dull reddish tubercles, one on each segment from second to fourth inclusive, but behind this there are two on each ring to the twelfth segment inclusive, the anterior one being the smallest, while the posterior and largest tubercle is more decidedly red, all encircled with a slight ring of black at their base. On the ninth segment above there is a prominent, nearly upright stout, fleshy horn, about one-twelfth of an inch long, pointed and similar in color to the body, but with an irregular grayish patch at each side. On the twelfth segment the two hinder tubercles are somewhat increased in size and united by a low ridge, tinted behind with deep reddish brown; there is also an oblique stripe of the same color extending forward from the base of the tubercles to near the spiracle on this segment. The terminal segment is flattened and has a number of small pale reddish and blackish tubercles scattered over its surface. In front of each of the smaller sub-dorsal tubercles, from fifth to twelfth segments inclusive, there is a dull white dot, and one also of a similar character in front of each of the spiracles along the middle segments of the body; from each of the tubercles throughout there arises a single dark short hair. Spiracles large, oval, dull grayish, faintly encircled with black. Along the sides of the body, close to the under surface, is a thick fringe of short, fleshy looking hairs of a delicate pink color.

The under surface is also of a delicate pink, of a deeper shade along the middle, becoming bluish towards the margins, with a central row of nearly round, velvety black spots, which are largest from the seventh to the eleventh segments, inclusive. The anterior segments are greenish white, tinted with rosy pink along the middle, with a dull reddish spot at

the base and behind each pair of feet. Feet pale greenish, spotted outside and tipped with black; prolegs dull greyish brown, margined with black.

This larva became a pupa on the 21st of June, and remained in this state for twenty-four days, producing the imago on the 15th of July.

MICRO-LEPIDOPTERA.

BY V. T. CHAMBERS, COVINGTON, KENTUCKY.

(Continued from page 130.)

ASPIDISCA.

For the purpose of comparing it with the other species, I quote here Dr. Clemens' description of

A. splendoriferella.

"Head golden; antennæ fuscous, tinged with golden. Fore wings from the base to the middle leaden grey, with a splendant lustre, and from the middle to the tip golden, with a broad, nearly straight, metallic, silvery streak, extending from the costa, near the tip, to the middle of the wing, and dark margined on both sides. This is nearly joined by a dorsal streak of the same hue, almost opposite to it, with converging dark margins, and with a blotch of dark brown scales adjoining it behind. In the costo-apical cilia is a short, blackish brown streak, parallel to the dark margin of the silvery costal streak. At the tip is a black, apical spot, with metallic, silvery scales in its centre, and a few silvery scales in the ciliae above and beneath it. A blackish brown hinder marginal line in the ciliae, interrupted by a silvery streak in the ciliae beneath the apical spot, and the ciliae yellowish brown. Hind wings leaden gray, and the ciliae yellowish brown."

There is a straight black streak in the ciliae, from the apical spot to the apex, not mentioned by Dr. Clemens.

Alar ex. 2 lines or less. I have made some other observations on it in its various stages, vol. 3, ante p. 223. As there stated, it mines the leaves not only of the Apple, in which Dr. Clemens found it, but also those of the Haw (*Crataegus*), Pear (*Pyrus*), Wild Cherry (*Prunus serotina*), and since then I have found it mining the leaves of the Quince (*Cydonia*). All of these trees (except, perhaps, the Wild Cherry) are so nearly related that it is not surprising to find in the leaves of any one of them any larva which mines the leaves of another, and the Wild Cherry is such a favorite food with the larvæ of Lepidoptera, that it is not surprising to find any larva feeding on it which is not exclusively attached to some single species. Thus an *Ornix*, which mines Apple leaves, also mines those of the Wild Cherry. *Tischeria malifoliella* Clem., and *Lithocolletis cratagella* also both mine the leaves of all the above named trees except, perhaps, the Pear and the Quince. The fact that *A. splendoriferella* mines the leaves of the trees named, affords no presumption then that it is a general feeder, or that it mines the leaves of any tree not closely allied to the Haw.

I make these suggestions because Mr. Stainton, in the preface to his very valuable addition of the writings of Dr. Clemens (for publishing which he has the hearty thanks of every student of the American Micros), states that he has bred from Aspen leaves, from Oregon, a species which it would be very hard to distinguish from *A. splendoriferella*. But because of the difference in the food plants, Mr. Stainton (rightly, I think) considers it a different species. If the vignette upon the title page of Mr. Stainton's edition, above named, is, as I suppose, intended to represent the mined Aspen leaf, I think it establishes the specific character of the Aspen species. The hole left in the Aspen (judging from the vignette) is very nearly an ellipse. That made by *A. splendoriferella* is much wider in proportion to its length, being nearly as wide as long, and the case is almost angulated at the sides. The mines of the Micro-Lepidoptera, and the larval cases of the case-bearing species, and the modes of pupation, and forms and colors of their cocoons and pupa cases, have specific characters as distinct as the galls made by the *Cynipida*. The color of a pupa case, cut from a leaf, depends, for instance, not only on that of the leaf, but of the silk with which it is lined and the color of the enclosed larva and pupa. But I have never been able to detect a difference between the pupa cases of *A. splendoriferella* from any of the leaves mined by it, as above stated. See remarks under the next species.

A. juglandiella. *N. sp.*

Except that it is *perhaps* a trifle smaller, I can not distinguish this species in the imago from *A. splendoriferella*. Nevertheless, I consider it a distinct species. The pupa case is oblong oval, much narrower in proportion to its length, and smaller in every way than that of *A. splendoriferella*, besides being more pointed at the end by which it is attached. Besides, although *splendoriferella* is much the most common species (at least 1000 mines of *splendoriferella* being found to a single one of *juglandiella*), yet I have never met with a mine of the former earlier than the latter part of July, whilst the mines of the latter are as abundant, or nearly so, in the latter part of May as at any time. The first mines of *juglandiella* that I discovered were in the leaves of a small Walnut tree, which stands under a large Wild Cherry tree. It was early in June. I found several mines, but they were not by any means abundant. Not a mine could I find on the Wild Cherry, either at that time or for two months afterwards. *Juglandiella* continued to mine the leaves of the Walnut throughout the season, but never became abundant. But from the latter part of July, on through the season, the mines of *splendoriferella* were abundant, not only in the leaves of that particular Wild Cherry tree, but in those of all the species mined by it, and by October the leaves were riddled with the holes left by cutting out the cases. The pupa case of *splendoriferella* is much larger than that of *juglandiella*, though there is no appreciable difference in the size of the insects. The former is dark yellowish, while the latter is brown. I have taken the latter species mining Walnut leaves at a great distance from any Wild Cherry trees, as well as close to them. (See also the remarks under *A. splendoriferella*.)

A. saliciella. *N. sp.*

Silvery. Antennæ faintly tinged with fuscous. There is a triangular white costal spot before the ciliæ, and an opposite dorsal one, each dark margined before and behind; *the space between these two streaks and behind them to the apical spot is silvery*. There is a golden yellow patch on the end of the disc immediately before the space, between the two streaks above mentioned (the costal and dorsal white streaks). Another golden yellow patch behind the costal streak, on the margin, with a very indistinct and small black costal streak in it; another golden yellow patch on the dorsal margin, behind the dorsal streak, and behind it is a blackish patch covering the base of the dorsal cilia. Apical spot black, and adjoining it

behind is a fan-shaped dark brown patch at the base of the apical cilia. Cilia silvery, and not containing a black streak from the apical spot to the apex.

The italics above indicate the differences between it and *A. splendoriferella*, and besides, it is much smaller than either that species or *A. ella*, having an alar ex. of less than $\frac{1}{8}$ of an inch, and thus smaller than *Nepticula microtheriella*, which, Mr. Stainton says, is the smallest heretofore known Lepidopteron. Besides, the antennae are not so distinctly fuscous as in *splendoriferella*, and the golden portions of the wing are not so deep or reddish golden as in that species. It resembles that species more closely than either *A. ella* or *A. lucifluella*. The pupa case is oblong ovate, brownish, not so much pointed at the anterior end as that of *A. juglandiella*, and is a little smaller.

Dr. Clemens found a mine and larva in the leaves of the White Willow (*Salix alba*), which he called *A. saliciella*, but he was not acquainted with the imago. I have not met with that mine, my species having been bred from the Weeping Willow. But as I have no doubt that it is the same species, I have adopted his name.

A. ella. Ante v. 3, p. 224.

In the description of this species I have* used the word "before" where I should have written "behind," as to the location of the costal streaks; and the whole description is so unsatisfactory that I wish to redescribe it. It is, however, difficult to get a good description of a species which does not present the same appearance in any two views of it.

Head, palpi, thorax and basal half of the primaries pale grayish silvery. Antennae fuscous above, silvery beneath. Apical half of the primaries black along the dorsal margin, the black spreading over the middle of the apical portion of the wing to the golden yellow costal part of the apical half of the wing. This golden yellow costal portion extends along the entire costo-apical margin, and along the middle of the apical portion of the wing it passes gradually into, or blends with, the blackish dorsal portion. (Perhaps a more correct description would be: apical half of the wing golden along the costal half, blackish along the dorsal half, the two colors meeting and blending with each other in the middle, and the black passing into the base of the dorsal cilia.) In some lights the golden is strongly tinged with red, and the black becomes a deep golden brown. In the black dorsal portion, behind the middle of the dorsal margin, is a triangular silvery streak; and opposite to it, in the

golden costal portion, is another, the two almost meeting so as to form a fascia, and both dark margined on both sides; behind the costal streak, at the end of the golden portion and before the apex, is another small costal silvery streak, which is distinctly dark margined before by a straight line, and faintly behind by an oblique one. Apical spot black, and behind and adjoining it is a fan-shaped, dark brown spot, behind which is a straight dark brown streak in the ciliæ, extending to the apex. The apical spot is margined before and on each side with brilliant, metallic, silvery scales, as in *splendoriferella*.

Al. ex. 2 lines or less. Same as in *splendoriferella*, but this species is slenderer than that. The first costal and the dorsal streaks are as in that species, but there is much less golden in the apical half of the wing, and much more blackish or dark brown. The apical spot and adjoining fan-shaped patch and apical streak are as in *splendoriferella*, but in *splendoriferella* there is but one costal streak. It is, in fact, less like *splendoriferella* than any of the other species. The pupa case is nearly an ellipse, slightly oval, golden yellow, marked with small brown dots.

I was at first in doubt whether this might not be Clemens' *A. lucifuella*, which mines Hickory leaves. But I cannot reconcile it to the requirements of his description, which says that *lucifuella* is larger than *splendoriferella*, and has three costal streaks. I have met with the larva of *lucifuella*, but have not succeeded in raising it. Dr. Clemens met with another mine in the leaves of the Hornbeam, which he called *A. astryae-foliella*, but the maker of the mine is still unknown. Possibly it may prove to be this species.

[Since the foregoing remarks were written, I have observed that the microscopic hairs (vegetable) on the surface of the case of *A. ella* are identical with those on the under surface of Hickory leaves, and this tends to the conclusion that this is Clemens' *lucifuella*; but other leaves may have similar hairs. The fact that I can not recognise it in Dr. Clemens' description is by no means conclusive, for my own first description is certainly defective, and the shades of coloring vary so with the play of the light, that it is a very difficult species to describe satisfactorily.]

ERRATA.—*Ante* p. 128, under *C. gigantella*, in line 5 of the description, for "these" read "three;" p. 129, for *fagi-costicella* read *fagi-corticella*.

PRELIMINARY CATALOGUE OF THE NOCTUIDÆ OF CALIFORNIA.

BY AUG. R. GROTE,

Curator of Articulata, Buffalo Soc. of Natural Sciences.

1. *Bombycia improvisa* (Hy. Edw.,) Proc. Ac. N. S., Cal., 5, p. 189.
"Cascades, W. T." Unknown to me and perhaps incorrectly referred to this group.

2. *Pseudothyatira expultrix* Grote.

"Cariboo, B. C.," Hy. Edw., l. c. Unknown to me from the West Coast.

3. *Habrosyne scripta* (Gosse.)

"Alaska" (?) Hy. Edw., l. c. Sitka, No. 137, Hy. Edw.

4. *Acronycta lupini* Behr., Bull. Buff. Soc. N. S., 1, p. 79.

One specimen.

5. *Acronycta lepusculina* Guenee, Bull. Buff. Soc. N. S., 1, p. 130.

A fresh specimen sent by Mr. Behrens gives me some reason to doubt this determination and to suspect a distinct species, allied to *A. leporina* and *A. lepusculina*, in California. The fore wings are narrower, the markings more obliterate above. A different material from that now accessible to me is needed to make any change in this determination or to confirm it with positiveness.

6. *Acronycta perdita* Grote.

♂ Nearest resembling *A. xyliniformis* of any of our Eastern species, but larger, more robust, and with the fore wings even darker. There is an absence of any softer shadings before and behind the transverse posterior line. All the markings are coarser. The terminal series of black interspaceal marks are large and heavy. The transverse posterior line has the outer dentations more uneven; the teeth on veins 4 and 6 are notably longer; the line itself seems hardly so near the terminal margin as in *xyliniformis*. The black shade streak at anal angle is heavier and the dash on the median space is different in position, more incor-

spicuous and near the t. a. line. The median shade is less prominent and the t. a. line more distinct and widely geminate. Hind wings white, like *xyliniformis*, but the fringe is merely black dotted, not cut with black as in the Eastern species. The palpi exceed the front more prominently than in *A. xyliniformis*. Exp. 40 m. m. "June 5th," Mr. Behrens.

7. *Feralia februalis* Grote. List of the Noct. of N. Am., p. 60.

"Sanzalito," Mr. Behrens, "February 12th."

8. *Agrotis saucia* (Hubner), Bull. Buff. Soc. N. S., 1, p. 135.

"Oakland," No. 15, Mr. Behrens.

9. *Agrotis fennica* (Tauscher.)

"Kodiak," No. 13, Mr. Behrens. A single ♂, which agrees with Herrich-Schaeffer's figure 146, except that the hind wings are very pale and whitish.

10. *Agrotis lycarum* Herrich-Sch., figs. 122-124.

No. 1392, Mr. Hy. Edwards; No. 31, Mr. Behrens. This species, which seems to be very common in California, I have determined with hesitation. I cannot discover, however, any difference of importance between Herrich-Schaeffer's figures, above cited, and the material before me.

11. *Agrotis Vancouverensis* Grote, Bull. Buff. Soc. N. S., 1, p. 134, plate 4, fig. 4.

"Vancouver's Island," No. 2624, Mr. Hy. Edwards.

12. *Agrotis formalis* Grote, List of the Noctuidæ of N. Am., p. 61. California, Mr. Behrens.

13. *Agrotis Wilsoni* Grote, List of the Noct. of N. Am., p. 62. California, Nos. 12 and 24, Mr. Behrens.

14. *Agrotis specialis* Grote, List of the Noct. of N. Am., p. 62. California, Mr. Behrens.

15. *Agrotis fuscigerus* Grote.

♂ ♀. A species closely resembling *A. {Cochrani}*, but with notably darker and more fuscous hind wings in either sex. The primaries are

much darker, more evenly colored, without that mottled appearance which has induced Mr. Riley's comparison of *Cochrani* with *chenopodii*. The lines are variably distinct; when present, the inner component line of the t. p. line is usually broad. The four specimens (♂ ♂ ♀ ♀) sent by Mr. Behrens under the No. 25, and as taken Sept. 13th and 14th, expand—♂ 30, ♀ 35 m. m., and cannot be referred to *Cochrani*.

16. *Agrotis Hollemani* Grote.

A small species with all the tibiae spinose; the fore tibiae have two rows of strong spines. Antennae pubescent. Fore wings of a dark bluish grey, with hardly a trace of the usual lines. A strong black basal stripe; the cell shaded with black about the discal stigmata, which are singularly shaped, the orbicular elongate and fusing with the moderate, excavate reniform, so that we are reminded of *Oncocnemis Chandleri*. The terminal space is indicated by interspaceal black streaks. Fringes concolorous with internal hair line. Hind wings blackish fuscous, with whitish fringes divided by a hair line. Beneath whitish, powdered with fuscous, without lines; hind wings with a minute discal dot. Head and thorax like primaries; collar with a dark superior line. *Expanse*, 30 m. m. Siskiyou Co., Cal., Capt. Holleman. From Prof. A. S. Packard, jr.

17. *Mamestra cuneata* Grote, Bul. Buf. Soc. N. S., 1, p. 139, plate 4, fig. 9.

No. 21, Mr. Behrens. "Mendocino, No. 21. The dot near internal angle of fore wings is always yellow; in a few specimens, probably rubbed, it is not noticeable.

18. *Mamestra chartaria* Grote, Bul. Buf. Soc. N. S., 1, p. 138, plate 4, fig. 12.

California, Mr. Behrens.

19. *Mamestra niveiguttata* Grote, Bul. Buf. Soc. N. S., 1, p. 140, plate 4, fig. 16.

California, Mr. Hy. Edwards.

20. *Mamestra puerilis* Grote, List of the Noct. of N. Am., p. 64. California, Mr. Hy. Edwards and Mr. Behrens.

21. *Mamestra cinnabarina* Grote, Proc. Bost. Soc. N. H., 16, p. 241.

California, Mr. Hy. Edwards and Mr. Behrens. Several specimens show a range of variation in the extent of the brown and palest tint on the primaries above.

22. *Mamestra laudabilis* (Guen.)

California, Mr. Hy. Edwards.

23. *Mamestra 4-lineata* Grote, Bul. Buf. Soc. N. S., 1, p. 140, plate 4 fig. 15 and List, p. 13.

California, Mr. Hy. Edwards and Mr. Behrens.

24. *Dianthæcia leucogramma* Grote, List. p. 64.

California, Mr. Hy. Edwards and Mr. Behrens.

25. *Dianthæcia rufula* Grote, List of the Noct. of N. Am., p. 64.

California, Mr. Behrens. "Oakland, No. 22."

26. *Dianthæcia insolens* Grote, List of the Noct. of N. Am., p. 65.

California, Mr. Behrens.

27. *Oncocnemis Behrensi* Grote, List of the Noct. of N. Am., p. 65.

California, Mr. Behrens. "Sanzalito, Feb. 10th to 24th."

(To be Continued.)

CORRESPONDENCE.

GRAPTA COMMA AND DRYAS.

DEAR SIR,—

I am able to give you the results of an experiment made with *Grapta comma*, the converse of that made in 1873 with *dryas*. On the 10th of May last I took a female, true *comma*—red hind wings and plain brown underside—and tied it up to a branch of Hop-vine, which branch was free from eggs of any sort. She laid in the bag some forty eggs, and I had from them thirty-nine caterpillars. Most of them in due time reached the chrysalis state, and between the 10th and 15th of June there emerged thirty-four butterflies—every one a *dryas*. In the fall of 1873, from eggs of *dryas*, there resulted a large number of *comma* and six *dryas*, as stated in the ENTOMOLOGIST for October. I think this fully settles the question of the dimorphism of the species.

Yours truly,

W. H. EDWARDS, Coalburgh, W. Va.

MISCELLANEOUS NOTES.

DEAR SIR,—

I send you the following items, hoping they may prove of interest:

CLISIOCAMPA SYLVATICA.—The caterpillars of this pest are swarming on almost every description of tree or shrub in the vicinity of this city, many trees being completely denuded of foliage. *C. Americana* is also common on apple trees.

LACHNOSTERNA QUERCINA.—This insect, though usually very abundant, has been quite scarce this season; I have not seen more than a dozen specimens.

DEPRAVED TASTE OF *P. TURNUS*.—One day early in June a *P. turnus* which I was pursuing hovered over and alighted upon some cow droppings, thrust out its tongue, and settled itself quietly to its disgusting repast. While in this position it was easily captured.

On the 27th of July, last year, it rained very heavily during the evening in the vicinity of Portland, where I was spending the summer; but the night seemed very favorable for moths, a large number entering the house, among them a fine specimen of *Philampelus satellitia*, two of *Arctia virgo*, and one of *Arctia rubricosa*, besides a number of others with the names of which I am not acquainted.

DESCRIPTION OF THE EGG OF *GASTROPACHA AMERICANA*.—The eggs of this moth are very pretty, being white with peculiar black markings. They were laid June 27th, by a female reared in confinement. Length .06 of an inch; width, .045. Form oval, flattened at the base and also above, but a little thicker at one end than at the other. At each end there is a semi-circular stripe and dot, closely resembling the crescent and star of the Turkish arms, and these markings are larger and more distinct on the larger end. On both the flattened surfaces there are markings like eyes, each formed by an oval spot in the centre, with a curved stripe above and a shorter straight one below, of which the latter is widened towards the extremities. Between and parallel to the two eye-brow-like marks there is another black stripe which is widest at the larger end of the egg, and tapers towards the other. Over the whole surface there is a minute indented reticulation, the meshes of which are irregular in form, with a depressed dot in the centre of each.

H. H. LYMAN, Montreal, P. Q.

DEAR SIR,—

A few days ago I went to a swamp where *Phaeton* feeds in early spring, and discovered several of the webs of that species spun over the stems of *Chelone glabra* and whatever other plants were contiguous. Within the webs were larvae about $\frac{1}{4}$ inch long, and as during the last few days, since I have had a number of them in the house, there is no appearance of feeding by the larvae, I presume they are quiet for the season and till next March. Seeing a good many *Phyciodes marcia* flying in the swamp, it occurred to me to try a female with a stem of *Chelone glabra*, and I did so with satisfactory results, as three days after I enclosed her in a bag, she laid about 75 eggs on the under side of one of the leaves. I hope I have at last found the food plant of this species, after having tried a score of plants to no purpose.

W. H. EDWARDS.

EDITORIAL SUMMARY.

PALÆONTOLOGY OF ONTARIO.—We are much pleased to observe that the Legislature of this Province is extending its liberality in the cause of Science to other departments, besides those somewhat utilitarian branches of Entomology and Horticulture, as is eminently manifest from the excellent Report before us on the Palæontology of Ontario. It has been prepared by Prof. H. Alleyne Nicholson, of the University of Toronto, and contains descriptions and figures of the organic remains of the Devonian Formation of Western Canada. No less than one hundred and sixty species of fossils are described, and illustrated by means of nearly sixty wood-cuts in the text, and eight splendid lithographic plates. It is noteworthy, also, that all the figures are original, except two of the wood cuts. We trust that the Legislature will long continue its assistance to this excellent work, and that Prof. Nicholson may be enabled to carry out a complete investigation of the Palæontology of all the fossiliferous geological formations in this country.

AMONG the "old country" publications that we have lately received, we may mention the 15th number of the *Scottish Naturalist* (Dr. F. B. White, Perth.) We gather from its pages that a goodly number of Field Clubs are being organized in Scotland, and that much satisfactory work

is anticipated from them. Cannot something of the kind be re-inaugurated here with a fair promise of success?—*Nature* continues to be as well filled as ever with most interesting and instructive matter; recent numbers have contained seasonable articles upon the Comet and the Transit of Venus, and a series of illustrated papers upon the observatories of the United States.—European potato growers are beginning to become alarmed at the prospect of a speedy invasion of their fields by the devastating Colorado Beetle. As it has now very nearly reached the Atlantic seaboard, we have little doubt that in another year or two it will succeed in crossing the ocean and striking terror into the hearts of all patriotic Irishmen. Mr. Newman, in a recent number of his "Entomologist," while he confuses the sweet potato with the ordinary potato, and the insects that prey upon these very different plants, expresses his disbelief in the prospect of trouble from any of our American pests. He goes on, however, to quote all the remedies against the Colorado beetle contained in the Report of our Society—without acknowledgement!

WE REGRET to announce the death of Mr. Geo. R. Crotch, M. A., of St. John's College, Cambridge, who sailed from England to America in 1872 for the purpose of studying the Entomology of parts which he considered incompletely known. He made collections, especially of Coleoptera, in California, Vancouver's Island, Oregon and other Districts. So much were his labors valued in England that his University on two occasions voted him a sum of money to aid him in the formation of collections for the Museum at Cambridge.

THE 23RD Meeting of the American Association is to take place this month at Hartford, Conn., beginning on August 12th. Dr. LeConte is the President elect. As an invitation was extended at the Portland meeting to the members of the Entomological Society of Canada to be present on this occasion, we trust that many of our friends will make a point of attending; there will no doubt be a large attendance of insect hunters from all parts of the continent.

THE 44TH Meeting of the British Association is to be held at Belfast, under the Presidency of Prof. Tyndall. It is to commence a week later than that at Hartford.

C. J. S. B.

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